Remarks

The Office Action mailed February 22, 2006 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1, 3-11, 13-20, and 24 are now pending in this application. Claims 1, 3-11, 13-20, and 24 stand rejected.

The rejection of Claims 1, 3, 9, 4-8, 24, 10, 11, 13, 19, 14-18, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Possin et al. (U.S. Patent 6,167,110) ("Possin") in view of Cusano (U.S. Patent 4,187,427) and Hu et al. (U.S. Patent 5,510,622) ("Hu") is respectfully traversed.

Possin describes an imagining apparatus (45) having an array of detectors (20). Each detector (20) includes an array of photosensor devices (23) coupled to a scintillator (34). Notably, detector (20) includes only a single array of photosensors coupled to a bottom surface of scintillator (34). As such, Possin cannot describe an array of detectors, wherein each detector includes a first and second offset array separated from each other by a scintillator array. Moreover, Possin cannot disclose a detector having a first array of photosensors offset one-half pitch from a second array of photosensors.

Hu describes an imagining system (10) including a conventional two-dimensional detector array (16) having a plurality of detectors (18) offset by one-half detector pitch. Notably, detectors (18) are all positioned within the same array. Furthermore, Hu does not describe a scintillator coupled to detectors (18). As such, Hu does not describe an array of detectors, wherein each detector includes a first and second offset array separated from each other by a scintillator array. Rather, Hu describes a detector array having a plurality of adjacent detectors within a single array. Furthermore, Hu teaches away from an array of detectors, wherein each detector includes a first and second offset array separated from each other by a scintillator array. Specifically, at Column 3, Lines 21-23, Hu states that "the resolution along the z-axis or the x-axis is measured by the distance between successive detector element centers." As such, implementing a first array of photosensors separated

from a second array of photosensors by a scintillator array would reduce the resolution of the Hu invention.

Cusano describes a collimated scintillator detector array including a plurality of scintillator bodies (10) coupled within a series of volumes defined by a plurality of collimator members (14). A first array of detectors (18) is positioned on a top of each scintillator body (10), and a second array of detectors (18) is positioned on a bottom of each scintillator (10). Notably, the first array of detectors (18) is not offset from the second array of detectors (18). As such, Cusano does not describe an array of detectors, wherein each detector includes a first and second offset array separated from each other by a scintillator array. Further, Cusano teaches away from an array of detectors, wherein each detector includes a first and second offset array separated from each other by a scintillator array. Specifically, at Column 4, Lines 7-9, Cusano states that "the detectors 18 are carefully aligned with collimator members 14 so that no signal overlap occurs between adjacent detector cells to facilitate reducing an undesirable loss in signal resolution." As such, offsetting the photosensors would result in an undesirable loss in signal resolution.

Claim 1 recites a radiation detector comprising "an array of detectors, each comprising . . . a first offset array comprising a first photon incident surface . . . a second offset array comprising a second photon incident surface . . . a scintillator array extending from said first photon incident surface to said second photon incident surface, wherein said first and second offset arrays are separated from each other by said scintillator array . . . ."

None of Possin, Cusano, and Hu considered alone or in combination, describe nor suggest a radiation detector as is recited in Claim 1. More specifically, none of Possin, Cusano, and Hu, considered alone or in combination, describe nor suggest a radiation detector including a detector array, wherein each detector includes a first and second offset array separated from each other by a scintillator array. Rather, in contrast to the present invention, Possin describes a detector array wherein each detector includes a single array, Cusano describes a detector having two aligned arrays, and Hu describes a detector array having a plurality of adjacent detectors.

Furthermore, Cusano teaches away from the present invention. Specifically, at Column 4, Lines 7-9, Cusano states that "the detectors 18 are carefully aligned with collimator members 14 so that no signal overlap occurs between adjacent detector cells to facilitate reducing an undesirable loss in signal resolution." As such, offsetting the photosensors would result in an undesirable loss in signal resolution. Moreover, Hu also teaches away from the present invention. Specifically, at Column 3, Lines 21-23, Hu states that "the resolution along the z-axis or the x-axis is measured by the distance between successive detector element centers." As such, implementing a first array of photosensors separated from a second array of photosensors by a scintillator array would reduce the resolution of the Hu invention. Accordingly, both Cusano and Hu teach away from the suggested combination. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Possin in view of Cusano and Hu.

Claims 3-9 and 24 depend from independent Claim 1. When the recitations of Claims 3-9 and 24 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 3-9 and 24 likewise are patentable over Possin in view of Cusano and Hu.

Claim 10 recites a radiation detector comprising "an array of detectors, each comprising . . . a first offset array comprising a first photon incident surface and a plurality of sensor elements having an aperture pitch size . . . a second offset array comprising a second photon incident surface and a plurality of sensor elements having the aperture pitch size; and . . . a scintillator array extending from said first photon incident surface to said second photon incident surface, said scintillator array is configured to direct at least a portion of a plurality of optical photons to said first photon incident surface and said second photon incident surface, said scintillator comprising a fiber optic scintillator having a plurality of optical fibers bundled in an array and disposed such that said x-rays are incident on said fiber optic scintillator substantially perpendicular to a respective optical axis of said plurality of optical fibers, said fiber optic scintillator further being optically coupled to at least two of said sensor elements such that said sensor elements are disposed at both ends of the plurality of optical

fibers, wherein said first and second offset array sensor elements are separated from each other by said scintillator array . . . ."

None of Possin, Cusano, and Hu considered alone or in combination, describe nor suggest a radiation detector as is recited in Claim 10. More specifically, none of Possin, Cusano, and Hu, considered alone or in combination, describe nor suggest a radiation detector including a detector array, wherein each detector includes a first and second offset array separated from each other by a scintillator array. Rather, in contrast to the present invention, Possin describes a detector array wherein each detector includes a single array, Cusano describes a detector having two aligned arrays, and Hu describes a detector array having a plurality of adjacent detectors.

Furthermore, Cusano teaches away from the present invention. Specifically, at Column 4, Lines 7-9, Cusano states that "the detectors 18 are carefully aligned with collimator members 14 so that no signal overlap occurs between adjacent detector cells to facilitate reducing an undesirable loss in signal resolution." As such, offsetting the photosensors would result in an undesirable loss in signal resolution. Moreover, Hu also teaches away from the present invention. Specifically, at Column 3, Lines 21-23, Hu states that "the resolution along the z-axis or the x-axis is measured by the distance between successive detector element centers." As such, implementing a first array of photosensors separated from a second array of photosensors by a scintillator array would reduce the resolution of the Hu invention. Accordingly, both Cusano and Hu teach away from the suggested combination. For at least the reasons set forth above, Claim 10 is submitted to be patentable over Possin in view of Cusano and Hu.

Claim 11 recites a method for fabricating a radiation detector, wherein the method comprises "fabricating an array of detectors, wherein fabricating each detector comprises . . . fabricating a first offset array including a first photon incident surface . . . fabricating a second offset array including a second photon incident surface . . . positioning a scintillator array between the first offset array and the second offset array such that the scintillator extends from the first photon incident surface to the second photon incident surface . . .

placing the first and second offset arrays within the detector such that the arrays are separated from each other by the scintillator array . . . ."

None of Possin, Cusano, and Hu, considered alone or in combination, describe nor suggest a method for fabricating a radiation detector as is recited in Claim 11. More specifically, none of Possin, Cusano, and Hu, considered alone or in combination, describe nor suggest a method for fabricating a radiation detector including placing a first and second offset array within at least one detector of a detector array such that the arrays are separated from each other by a scintillator array. Rather, in contrast to the present invention, Possin describes a detector array wherein each detector includes a single array, Cusano describes a detector having two aligned arrays, and Hu describes a detector array having a plurality of adjacent and indistinct detectors.

Furthermore, Cusano teaches away from the present invention. Specifically, at Column 4, Lines 7-9, Cusano states that "the detectors 18 are carefully aligned with collimator members 14 so that no signal overlap occurs between adjacent detector cells to facilitate reducing an undesirable loss in signal resolution." As such, offsetting the photosensors would result in an undesirable loss in signal resolution. Moreover, Hu also teaches away from the present invention. Specifically, at Column 3, Lines 21-23, Hu states that "the resolution along the z-axis or the x-axis is measured by the distance between successive detector element centers." As such, implementing a first array of photosensors separated from a second array of photosensors by a scintialltor array would reduce the resolution of the Hu invention. Accordingly, both Cusano and Hu teach away from the suggested combination. For at least the reasons set forth above, Claim 11 is submitted to be patentable over Possin in view of Hu and further in view of Cusano.

Claims 13-19 depend from independent Claim 11. When the recitations of Claims 13-19 are considered in combination with the recitations of Claim 11, Applicants submit that dependent Claims 13-19 likewise are patentable over Possin in view of Hu and further in view of Cusano.

Claim 20 recites a method for fabricating a radiation detector, wherein the method comprises "fabricating an array of detectors, wherein fabricating each detector comprises . . . fabricating a first offset array including a first photon incident surface including a plurality of sensor elements including a plurality of photosensor devices . . . fabricating a second offset array including a first photon incident surface including a plurality of sensor elements including a plurality of photosensor devices . . . positioning a scintillator array between the first offset array and the second offset array such that the scintillator extends from the first photon incident surface to the second photon incident surface, the scintillator array is configured to direct at least a portion of a plurality of optical photons to the first photon incident surface and the second photon incident surface, the scintillator including a fiber optic scintillator including a plurality of optical fibers bundled in an array and disposed such that the x-rays are incident on the fiber optic scintillator substantially perpendicular to a respective optical axis of the plurality of optical fibers, the fiber optic scintillator further being optically coupled to at least two of the sensor elements such that the sensor elements are disposed at both ends of the plurality of optical fibers . . . placing the first and second offset arrays within the detector such that the arrays are separated from each other by the scintillator array . . . ."

None of Possin, Cusano, and Hu, considered alone or in combination, describe nor suggest a method for fabricating a radiation detector as is recited in Claim 20. More specifically, none of Possin, Cusano, and Hu, considered alone or in combination, describe nor suggest a method for fabricating a radiation detector including placing a first and second offset array within at least one detector of a detector array such that the arrays are separated from each other by a scintillator array. Rather, in contrast to the present invention, Possin describes a detector array wherein each detector includes a single array, Cusano describes a detector having two aligned arrays, and Hu describes a detector array having a plurality of adjacent and indistinct detectors.

Furthermore, Cusano teaches away from the present invention. Specifically, at Column 4, Lines 7-9, Cusano states that "the detectors 18 are carefully aligned with collimator members 14 so that no signal overlap occurs between adjacent detector cells to

facilitate reducing an undesirable loss in signal resolution." As such, offsetting the photosensors would result in an undesirable loss in signal resolution. Moreover, Hu also teaches away from the present invention. Specifically, at Column 3, Lines 21-23, Hu states that "the resolution along the z-axis or the x-axis is measured by the distance between successive detector element centers." As such, implementing a first array of photosensors separated from a second array of photosensors by a scintialltor array would reduce the resolution of the Hu invention. Accordingly, both Cusano and Hu teach away from the suggested combination. For at least the reasons set forth above, Claim 20 is submitted to be patentable over Possin in view of Hu and further in view of Cusano.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1, 3, 9, 4-8, 24, 10, 11, 13, 19, 14-18, and 20 be withdrawn.

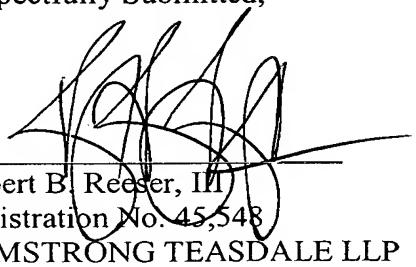
Moreover, Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Possin, Hu, or Cusano considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Possin with one or more of Hu or Cusano because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejection is based on a combination of teachings selected in an attempt to arrive at the claimed invention. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for these reasons, along with the reasons given above, Applicants request that the Section 103 rejections of Claims 1, 3-11, 13-20, and 24 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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